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refers). The reader will look in vain in Mr. Mikami's work for any justification of this effusive praise which flatters neither Seki, nor Newton, nor the Japanese. Seki was undoubtedly for his time and place an able mathematician, but the luster of his light is only dimmed by comparison with Newton or Galileo.

In concluding our review we wish to state again that Mr. Mikami has rendered a real service to the history of science by his exposition of the development of mathematics in China and Japan.

L. C. KARPINSKI.

PROBLEMS AND SOLUTIONS.

B. F. FINKEL, CHAIRMAN OF THE COMMITTEE.

PROBLEMS FOR SOLUTION.

SPECIAL NOTICE. In proposing problems and in preparing solutions, contributors will please follow the form established by the MONTHLY, as indicated on the following pages.

In particular, a solution should be preceded by the number of the problem, the name and address of the proposer, the statement of the problem, and the name and address of the solver.

The solution should then be given with careful attention to legibility, accuracy, brevity without obscurity, paragraphing and spacing, having in mind the form in which it will appear on the printed page.

Please use paper of letter size, write on one side only, leaving ample margins, put one solution only on a single sheet and include only such matter as is intended for publication.

Drawings must be made *clearly* and *accurately* and an extra copy furnished on a *separate sheet* ready for the engraver.

Unless these directions are observed by contributors, solutions must be entirely rewritten by the committee or else rejected.

Selections for this department are made two months in advance of publication.

Please send all solutions direct to the chairman of the committee.

MANAGING EDITOR.

ALGEBRA.

When this issue was made up, solutions had been received for 403-4-5-7-9 and 410. Solutions of 406 and 408 are desired.

413. Proposed by C. N. SCHMALL, New York City.

Apply Euler's transformation to show that

$$1 + 2^2x + 3^2x^2 + 4^2x^3 + 5^2x^4 + \cdots = \frac{1+x}{(1-x)^3}.$$

(BROMWICH, *Theory of Infinite Series*, p. 62, ex. 20.)

414. Proposed by R. D. CARMICHAEL, Indiana University.

Prove by means of an example that one of the series

$$\sum_{k=1}^{\infty} \frac{1}{c_k}, \quad \sum_{k=1}^{\infty} \frac{1}{c_k - 1}, \quad c_k \neq 0, 1,$$

may be divergent while the other is convergent.

415. Proposed by C. N. SCHMALL, New York City.

Show that

$$\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \frac{1}{7^2} + \cdots = \frac{\pi^2}{8}.$$

(BROMWICH, *Infinite Series*, p. 187; and also p. 452, ex. 7, (iii)).

416. Proposed by C. E. FLANAGAN, Wheeling, Va.

The sides of a given rectangle are a and b , in which a rectangle is to be inscribed one of whose sides is c . Find the other side, using Euler's rule for quartics.

417. Proposed by A. J. RICHARDSON, Marquette, Mich.

Required to reduce the quartic

$$x^4 + px^2 + qx + r = 0$$

to the form

$$(x^2 + k)^2 = [(2k - p)x + (2k - q)]^2,$$

wherein k is the solution of a certain cubic. Hence, express the solution of the given quartic in terms of p , q , r , and k .

GEOMETRY.

When this issue was made up, solutions had been received for 434-5-6 and 439. Solutions of 432-3 and 441-2-3 are desired.

441. Proposed by H. E. TREFETHEN, Colby College.

In the triangle ABC find the locus of all points at which the sides AB , AC subtend equal angles.

442. Proposed by J. B. SMITH, Hampden-Sidney, Va.

If any three straight lines, AD , BE , CF , be drawn from the corners of the triangle ABC to the opposite sides, a , b , c , they will enclose an area. If Δ , Δ'' be the areas of the triangles ABC , DEF show that

$$\frac{\Delta''}{\Delta} = \frac{(AF \cdot BD \cdot CE - AE \cdot CD \cdot BF)^2}{(ab - CE \cdot CD)(bc - AE \cdot AF)(ca - BF \cdot BD)},$$

where the signs of the factors are to be determined by the following rule: Each segment being measured from one of the corners of the triangle ABC , along one of the sides, is to be regarded as positive or negative according as it is drawn towards or from the other corner in that side.

443. Proposed by C. N. SCHMALL, New York City.

A quadrilateral of any shape whatever is divided by a transversal into two quadrilaterals. The diagonals of the original figure and those of the two resulting (smaller) figures are then drawn. Show that their three points of intersection are collinear.

CALCULUS.

When this issue was made up, solutions had been received for 346-7-9 and 351-4-6-7. Solutions of 332-5, 340-5-8 and 352-3-5 are desired. A complete solution of 339 is also desired.

363. Proposed by B. F. FINKEL, Drury College.

The axis of a right prism whose cross-section is a regular polygon of n sides coincides with the diameter of a sphere of radius R . Find the surface of the sphere included within the prism.

364. Proposed by EMMA GIBSON, Drury College.

Solve the differential equation

$$(xp - y)^2 = a(1 + p^2)(x^2 + y^2)^{3/2}, \quad \text{where } p = dy/dx.$$

365. Proposed by C. N. SCHMALL, New York City.

Show that the area inclosed by each of the following three curves is equal to that of the circle of radius a ; viz., πa^2 .

$$(1) \quad a^2 x^2 = y^2 (2a - y),$$

$$(2) \quad a^2 - x^2 = (y - mx^2)^2,$$

$$(3) \quad (xy + c + bx^2)^2 = x^2(a^2 - x^2).$$